



## NASA-JSC Partnership with Ad Astra Yields Rocket Technology That's Out of this World

### Description:

NASA-JSC and Ad Astra partnered in 2005 to continue development of a promising advanced plasma rocket technology that will increase efficiency and effectiveness of space exploration. The technology, which is called Variable Specific Impulse Magnetoplasma Rocket (VASIMR), was originally developed by Dr. Franklin Chang-Diaz, former astronaut and founder of Ad Astra. Predicted commercial applications of VASIMR include the reboost of large orbiting platforms, satellite delivery and repositioning, as well as cargo delivery to the Moon. The technology could also provide high power propulsion for interplanetary human and robotic missions.

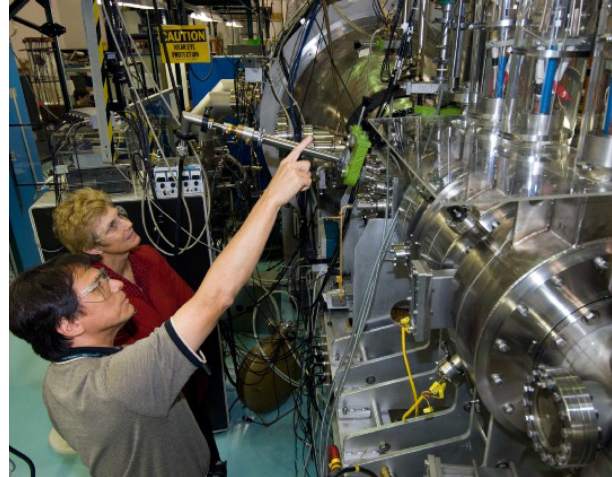
### NASA Mission Directorate Benefit:

If successful, the VASIMR rocket's plasma displacement technology concept will enable NASA to gain a hundred times more thrust than current rockets. The resulting efficiency would not only enable NASA to accomplish its missions more quickly, but also could result in dramatic fuel savings.

VASIMR's design features a magnetic force field used to control and direct the plasma exhaust jet. This enables the rocket to operate at extreme temperatures that match those found in the sun's interior. Conventional chemical rocket nozzles would melt under such extreme temperatures.

### Worth Noting

The VASIMR was conceived by Dr. Chang-Diaz in 1979 while at The Charles Stark Draper Laboratory in Cambridge, Massachusetts. He was selected as a NASA astronaut in 1980. As director of the NASA Advanced Space Propulsion



Laboratory, he continued his work on the VASIMR. Further development of the technology quickly turned into a worldwide collaborative effort, featuring three NASA centers, national laboratories, industry and academia.

In addition to his VASIMR research, Dr. Chang-Diaz is a native of Costa Rica and naturalized U.S. citizen. He has initiated multiple international NASA space technology initiatives, primarily with Latin America.

### Measurable Impact

**License Benefit:** This license enables Ad Astra to practice and further develop the technology through private investment for future space missions.

**Agreement Benefit:** The advancement of a promising rocket technology that should increase the efficiency of current rockets one hundred-fold, while also operating more cost-effectively by utilizing less fuel.

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### About NASA-Johnson Space Center Technology Transfer Office

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